IASE REVIEW

December 2006

INTERNATIONAL ASSOCIATION FOR STATISTICAL EDUCATION
http://www.stat.auckland.ac.nz/~iase/

REPORT ON IASE ACTIVITIES OF 2006

1. IASE Executive 2005-2007

President	Gilberte Schuyten	Finance, Associate Editor SERJ, Editor IASE Review, ISI Council, General Coordination
President-Elect	Allan Rossman	IASE sessions at ISI-56, Lisboa, 2007
Past-President	Chris Wild	IASE Editor in International Statistical Review, Website Editor
Vice-Presidents	Andrej Blejec	Editor IASE Matters in Teaching Statistics, IASE section of ISI Newsletter, Conferences Officer, Links pages ICOTS-8 LOC Chair
	John Harraway	ICOTS-7 IPC Scientific Secretary ICOTS-8 IPC Chair
	Chris Reading	Coordination of IASE Publications
	Michiko Watanabe	Links pages, Attracting new members
	Larry Weldon	Editor IASE Matters in Teaching Statistics, IASE section of ISI Newsletter, Links pages, National Correspondents Network
Ex-officio	Daniel Berze	ISI Executive Director
Special assignments	Carmen Batanero	Chair IPC for ICOTS-7, Chair IPC for ICMI/IASE Joint Study
	Carol Joyce Blumberg	International Statistical Literacy Project (ISLP), IASE rep. on ISI Publications Committee
	Lisbeth Cordani	LOC rep. IPC ICOTS-7

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Helen MacGillivray	IASE sessions at ISI-57, Durban, 2009
Iddo Gal	Co-editor SERJ
Thom Short	Co-editor SERJ
Beth Chance	Assistant Editor SERJ
Susan Starkings	Programme Chair for ICOTS-7

2. The IASE statistics education community in 2006

Gilberte Schuyten, IASE President

The past year has been a very successful one for the IASE. I would like to express my gratitude to all the 2005-2007 IASE Executive Committee members, IASE members with special assignments and all people who participated this year in the many IASE activities. The 2006 report starts with welcoming our fifth honorary member Carmen Batanero.

The main event was our ICOTS-7 Conference in Salvador, Brazil. The conference was a big success thanks to the excellent work by the International Programme Committee and in particular to the efforts by Carmen Batanero, Susan Starkings and John Harraway as well by the excellent local organization by Lisbeth Cordani, Pedro Morettin and their team. A main result is the ICOTS-7 Proceedings CD Rom edited by Allan Rossman and Beth Chance which is now freely available at the publication page of IASE. A special extensive report is included in this issue.

Plans are underway for next ICOTS-8 in 2010 in Slovenia. After having venues at different continents, ICOTS-8 returns to Europe where ICOTS-1 started in the UK in 1982 (see p. 31).

The International Statistical Literacy Project (ISLP) is under transition. Under the leadership of Carol Joyce Blumberg from the start in 2001 up to now, Carol constructed a web site which offered a gateway on Internet towards Statistical Literacy and towards IASE. Juana Sanchez is taking over and has a great vision about ISLP. You can read more about it on p. 18

The IASE research flag SERJ is in good shape. Two very interesting issues are published in 2006, one of which is a special issue *Reasoning About Distribution* with guest editors Maxine Pfannkuch and Chris Reading.

The flow of submissions is increasing and thanks to the efforts of the editorial board under the leadership of Iddo Gal and Tom Short the journal is growing in prestige (see p. 21).

The important collaboration with ICMI *Statistics Education in School Mathematics Challenges for Teaching and Teacher Education* started in 2005 under the leadership of Carmen Batanero is making progress.

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This ICMI/IASE project consists of several components, one of which is the IASE Roundtable in 2008 in Mexico. More details about this important project are given throughout this issue.

An update on the IASE Web Site is given by Past-president and Website Editor Chris Wild on page 27.

Preparations are underway for the coming IASE activities. The IASE programme for the 56th Biennial Session of the International Statistical Institute (ISI), to be held in Lisboa, Portugal in August 2007, is complete. Allan Rossman, chair of Programme Committee of IASE sessions for Lisboa, has organized a varied list of topics for Invited Paper Meetings, both organized by IASE alone and in co-operation with other ISI Sections and Committees (see report in page 29). Furthermore, IASE organizes an IASE Satellite Conference **Assessing Student Learning in Statistics,** just before the 56th ISI Biennial Session to be held at Guimarães, the cradle of Portugal as a Nation. These IASE Satellites are attracting more and more statistics educators and are growing in importance as well as from the teaching as profession perspective as from the statistics education research perspective. Brian Phillips and Beth Chance are still coping with the flow of submissions and are preparing an interesting and enjoyable meeting (see p. 28).
Planning for 57th Biennial Session at Durban in 2009 is underway. The Programme Committee with chair Helen MacGillivray has chosen the theme *Statistics Education for the Future*.

In 'The coming of Age of Statistical Education' Vere-Jones (1995) discusses a threefold purpose of IASE: (1) IASE is a professional group representing the interest of statistics teachers, (2) IASE is a research organization promoting research into statistics education and (3) IASE is an organization representing the statistics community in education matters.
The above mentioned activities of IASE demonstrate that IASE has been working during 2006 on all three roles. In order to fortify the IASE as an organization representing the statistics community in education matters, I would like to invite ISI members to become a member of IASE. If you are not yet a member of another ISI Section, it is free of charge. Please send an e-mail to Margaret (mmly@cbs.nl) indicating that you are an ISI member and that you would like to join IASE. If you are an ISI member and already a member of another ISI Section, then there is a nominal charge (sees the application form on the IASE website or sends an e-mail to Margaret). If you have any further questions, please write to me (Gilberte.schuyten@ugent.be).

We plan to continue our policy of free access on our web site for our publications and of cooperation with other statistics education journals and professional bodies interested in statistics education.
You can help making this statistics education community stronger by joining us and by offering us your support in our activities. In order to represent statistics teachers, statistics education researchers and the statistics community in education matters we need your support, whether you are statistician, educator, researcher or teacher.

Gilberte Schuyten, December 2006

President IASE

3. Honorary Members

IASE statutes give the possibility of nominating honorary members as a way of recognizing the work and dedication of some of our members. It was with great pleasure that the IASE Executive Committee approved the nomination of Carmen Batanero whose work has contributed significantly to the success and growth of our Association. This nomination was officially announced during the ICOTS-7 conference dinner in Brazil.

Carmen Batanero provided outstanding leadership of IASE during her presidency in 2003-2005, was one of the founders of the IASE research journal SERJ, organized Roundtables at Tokyo and Granada, is the driving force behind the ongoing collaborative study with ICMI and was a marvellous ICOTS-7 organizer. Much appreciated are also her efforts and sensitivity in attracting young researchers to the IASE statistics education community.

IASE feels fortunate to secure the services of someone as talented and experienced as Carmen Batanero and will be very pleased if she would continue as HONORARY MEMBER in making IASE the most important statistics education community.

Carmen Batanero (at right) joins our four other honorary members David Moore, Anne Hawkins, Maria G. Ottaviani and Brian Phillips (from left to right).

Gilberte Schuyten
President IASE

4. The 7th International Conference on Teaching Statistics

Working Cooperatively in Statistics Education
Salvador, Bahia, Brazil 2-7 July 2006

4.1 Report from Gilberte Schuyten (President IASE), Carmen Batanero (IPC Chair), Lisbeth Cordani (LOC)
This report has previously been published in the American Statistical Association (ASA) AmstatNews, August 2006 (http://www.amstat.org/publications/amsn)

The International Conferences on Teaching Statistics (ICOTS) are the most important means of interchange that the International Association for Statistical Education (IASE) offers to the community of professionals and researchers concerned with statistics education. ICOTS history started 24 years ago when the Education Committee of the International Statistical Institute (ISI) decided to held an International Conference on Teaching Statistics. The success of ICOTS-1 (1982, Sheffield, UK), ICOTS-2 (1986, Victoria, Canada), ICOTS-3 (1990, Dunedin, New Zealand) demonstrated that statistics teachers felt a strong need to unite, talk, and discuss the problems experienced in the course of their daily activities. In the meantime, it gave specialists in statistics, psychology and statistics education a forum to present the results of their research. Since the creation in 1991 of IASE as a section of ISI, IASE continued organizing ICOTS every four year (ICOTS-4, 1994, Marrakech, Morocco; ICOTS-5, 1998, Singapore; ICOTS-6, 2002, Cape Town, South Africa).

ICOTS-7 'Working Cooperatively in Statistics Education' is the first ICOTS conference at the South American continent and was attended by a total of 520 delegates from 55 countries. It was organized in collaboration with the Brazilian Statistical Association (ABE) with support by the American Statistical Association and other institutions (see list at ICOTS-7 webpage).

The high number of Latin American delegates (over 170) reflects the mature state of statistics education in Latin America. Their participation was stimulated by reducing the fees for these delegates and by running some activities in Spanish and Portuguese.

The conference was a great success thanks to the excellent work by the International Programme Committee and in particular to the efforts by Carmen Batanero, Susan Starkings, Lisbeth Cordani, John Harraway and John Shanks as well as all Topic Organizers and organizers of contributed papers and of posters. The efficient local organization and hospitality by Pedro Morettin, Lisbeth Cordani, Pedro Silva, Clelia Toloi, Gilenio Borges, Wilton Bussab and their team as well as the warm atmosphere and natural beauty of Salvador resulted in excellent conference. Two main results are the beautiful web page managed by John Shanks and the ICOTS-7 Proceedings CD Rom edited by Allan Rossman and Beth Chance with over 350 papers and 120 posters abstracts. The ICOTS-7 Proceedings are freely accessible at the IASE website on the IASE publication page.

Special Interest Groups of Latin American educators started working one year before ICOTS-7 via Internet forums and met twice during the conference: SIG1 'Training Mathematics teachers to teach Statistics in Spanish and Portuguese speaking countries', SIG 2 'Young Latin American researchers in Statistics education' and SIG 4 'Curricular development in Statistics education in Latin America'. Also the exhibition of concrete models in mathematics and statistics of the 'Laboratório de Ensino de Matemática coordinated by Elinalva Vasconcelos attracted many delegates. Special sessions and administrative meetings completed the programme. In one of these special sessions the forthcoming ICMI /IASE Study conference to be held in Monterrey, Mexico, June 30 – July 4, 2008, organized in collaboration with ICMI, the International

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Commission on Mathematical Instruction was announced. Also several activities of the IASE journal 'Statistics Education Research Journal' (SERJ) were organized by the SERJ editor Iddo Gal. Two workshops were run: one for current and new referees and the other for prospective authors. In the panel 'Statistics Education Journals: cooperating not competing', editors of SERJ, Teaching Statistics and Journal Statistics Education (JSE) discussed how to join efforts.

The theme 'Working Cooperatively' has many faces. International cooperation was clearly emphasized in sessions under topic 1 'Working cooperatively in Statistics education', topic 9 'An international perspective on Statistics Education' and in other invited paper sessions. Also in the seven plenary lectures, speakers enlightened different aspects of 'working cooperatively'. Statistics education is indeed based on many different disciplines such as statistics, education, mathematics education, psychology, sociology, philosophy which makes interdisciplinary cooperation for research beneficial for the advancement of statistics education research. Recent trends in teaching-learning theories emphasize the role of student activity and social interaction in learning. Cooperative learning is said to stimulate depth of understanding, acquisition of problem-solving skills and formation of positive attitudes toward the subject being taught. The traditional model of teaching as a 'transmission' is changing into a 'transformation' model of learning.

Following the example of ICOTS-6 in South Africa where teacher training activities were for the first time organized as a separate stream throughout ICOTS, the Local Organizing Committee and in particular Lisbeth Cordani, Lilia Carolina Costa and 20 lecturers and observers organized a series of workshops attended by 60 local school teachers. The active approach of these activities was highly appreciated by the participants and they are looking forward for more. All this was possible thanks to financial support by UNESCO and local support by the Universidade Federal da Bahia and the Instituto Anisio Teixeira. By supporting these local workshops IASE aims to stimulate statistics education in that part of the world the conference takes place and aims to attract people to research in statistics education.

During twenty four years of continuous critical work and progress in the field of statistics education, the ICOTS conferences have provided international fora for those involved in statistics education to exchange their ideas and to present their research and experiences in teaching statistics. This effort is reflected in the seven volumes of ICOTS Proceedings, which now constitute a valuable contribution to statistics education as a research discipline and a desired reference for teachers and researchers. In order to enhance the quality of the papers, the International Programme Committee organized onwards ICOTS-6 a refereeing option for people submitting a paper. The papers presented in the ICOTS-7 proceedings are the product of the effort of more than 500 educators, statisticians, psychologists, researchers and lecturers. The more than 220 invited papers of the conference aim to present a synthesis of the main tendencies and developments in statistics education. They have been organized around the following 9 main topics: Working cooperatively in Statistics education, Statistics education at school level, Statistics education at the post-secondary level, Statistics education/training and the workplace, Statistics education and the wider society, Research in Statistics education, Technology in Statistics education, Other determinants & developments in Statistics education, An international perspective on Statistics education. The proceedings are completed with keynote lectures, about 110 Contributed Papers and about 120 summaries of Posters.

A conference like ICOTS only can happen because of the commitment of a large number of people from around the world who are prepared to freely give much time and effort. We would like to pay tribute to the great support we received from so many people who helped in making the conference such a success.

After having ICOTS conferences at different continents, next ICOTS-8 will return to Europe where it started in 1982; this time in Slovenia in 2010 at Ljubljana. Note already the dates in your diary July 11-16, 2010, we are looking forward to meet you there!

4.2 Summaries of topic sessions
Full papers and complete data of authors and organizers can be found in the ICOTS-7 Proceedings which are available at the publication page of the IASE website
http://www.stat.auckland.ac.nz/~iase/publications.php

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Topic 1 Working cooperatively in Statistics education
Conveners: Elizabeth Cordani (Brazil,) and J.Michael Shaughnessy (USA)

Session 1A *Working cooperatively to promote Statistical literacy*, was organized by Carol Blumberg (USA) and Enriqueta Reston (Phillipines). Giovanni A. Barbieri and Paola Giacché spoke on the worth of hypertext materials for promoting and improving statistical literacy; Vicki Crompton & John Flanders discussed literacy issues when presenting statistics to the media; and Wendy Watkins and Charles Humphrey presented a case of introducing statistics and data into traditional libraries.

Co-operative efforts involving Statistics, local culture and consumers, Session 1B, was organized and chaired by Jerry Morena (USA). Papers were presented on statistics approaches for indigenous and migrant students (Megan Clark), an internship program in Pakistan (Saleha Naghmi Habibullah), and collaboration between police and statisticians on emergency 911 calls (John Holcomb and Norean Radke Sharpe).

Session 1C was organized by Maria Pannone (Italy) and dealt with *Co-operative efforts involving Statistics and Mathematics Education*. Tânia Maria Mendonça Campos and Silva Coutinho forecasted research needed with pre-service and in-service teachers relating to combining mathematics and statistics education. An argument was made by Linda Gattuso that indeed it is possible to provide synergistic experiences if the mathematical concepts are highlighted within the statistical problems. The advantages of using a web environment in conjunction with a cooperative learning approach was discussed by S. Mignani, P. Monari, R. Ricci, and A. Orlandoni.

Co-operative efforts involving Statistics teachers & researchers, Session 1D, was organized by Evelio Osvaldo Fabbroni (Panama). Susan Starkings spoke about the efforts of National and Royal Statistics Societies to become involved with important statistics education issues. Oscar Hernández emphasized the importance of using real data with social science students, in order to highlight the important role that data can play in the development of social theories. Fernando Avila and Miguel Nakamura presented information about a statistical consulting lab in Mexico that is bringing together statistical graduate students and statistics researchers.

Session 1E was organized by David Ospina, and dealt with issues of *Cooperation in statistics education in Latin America*. The role of the American Statistical Association (ASA) with educational ambassadorships between the US and other nations was presented by Martha Aliaga. Guido E. del Pino spoke about the youthfulness of statistics education in Latin America, and focused on the importance of cooperation between statistical departments and statistics associations in Chile, and Ana Silvia Haedo argued that a return to more democratic conditions in many South American countries has helped to make it once again possible to promote science and statistics education across countries in Latin America.

A Panel discussion 1F involving current or recent past editors of three statistics education journals, *Journal of Statistics Education (JSE), Statistics Education Research Journal (SERJ),* and *Teaching Statistics* was organized by Robert Stephenson (USA), with discussants Flavia Jolliffe, Neville Davies, Jackie Dietz, and Bob Stephenson (chair). Although each journal has a different focus, and a different intended audience, there are parts of the journals work and mission that overlap, and ways of working together to strengthen all statistics education journals were discussed.

The theme of "cooperation" in statistics education was well represented throughout all the sessions in Topic 1 by the conveners, organizers, presenters, authors, and discussants.

Topic 2 Statistical Education at the School Level
Conveners: Dani Ben-Zvi (Israel) and Lionel Pereira Mendoza (Singapore)

Statistics has become a significant component of the school curriculum in many countries. It is introduced from the start of primary school, even Kindergarten in some countries, with topics such as data gathering and pictographs being introduced in the first year of formal schooling. At the other end relatively sophisticated statistical analyses can be taught in the later part of secondary school. In the recent years, statistics in

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school have seen major developments in curriculum, technology, innovative teaching methods, and research on learning and teaching. Topic 2 in ICOTS-7 that focused on *Statistical Education at the School Level* provided a scholarly arena for those involved in statistics education at the K–12 school level to exchange their ideas and to present their current research and experiences in teaching statistics.

Topic 2 sessions focused on a variety of issues associated with school level statistics, including: Successfully implementing statistical education in primary schools and in secondary schools, innovative curriculum and teaching strategies, the use of real data and technology in school statistics, statistics teachers training, project-based learning, research on school level statistics, students assessment, and socio-cultural issues. Those who attended Topic 2 sessions had an opportunity to discuss the latest thinking regarding statistics at the school level in 25 presentations grouped into seven sessions. Topic 2 has also hosted a series of workshops attended by 60 local school teachers. The active approach of these activities was highly appreciated by the participants and they are looking forward for more.

We wish to thank our dedicated Session Organizers who volunteered to put together a rich and interesting scientific program: Efi Paparistodemou (Cyprus), Susan Starkings (United Kingdom), Roxy Peck (United States), Gail Burrill (United States), Andee Rubin (United States), Katie Makar (Australia), Li Jun (China), Arthur Bakker (The Netherlands), Dani Ben-Zvi (Israel), Lisbeth Cordani (Brazil), and Lilia Carolina Costa (Brazil).

Topic 3 Statistics education at the post-secondary level
Conveners: Martha Aliaga (USA) and Elisabeth Svensson (Sweden)

This topic covered a large variety of sessions and presentations, and the aim to providing multi-disciplinary and multi-conceptual examples of teaching statistics at the post secondary level was fulfilled by the ten sessions, 37 presentations, and one panel debate. The titles of the sessions and of the presentations illustrate the great coverage of the topic and reflected experiences from the whole world.

Session 3A *Statistics as a Service Subject in Courses* organized by Clarice G B Demétrio, Brasil. E Sowey, Australia talked about the importance that the students felt statistics worth the effort to study in *Letting students understand why statistics is worth studying.* A. K McFadyen, Scotland talked about experiences from applied statistics in *From statistician to ophthalmologist via nursing, occupational therapy and physiotherapy,* and T E O´Brien, USA, also reported from service courses in the presentation titled *Teaching statistical concepts, fundamentals and modelling,* and P Verhoeven talked about *Statistical education in the Netherlands and Flanders.*

Session 3B *Teaching Robust Methods* organized by V J Yohai, Argentina was a homogeneous session about robust statistical methods, besides the presentation concerning *Teaching robust statistics for regression* by Yohai, the presentations were, E. Ronchetti, Switzerland, *The historical development of robust statistics,* R H Zamar, Canada, *Interactive learning tools.*

Session 3C *Mentoring of Graduate Students,* organized by S Bangdiwala, USA, covered experiences of supervising students in different countries; from the Universidad de Chile (I Schiattino), from Universidade de Sao Paolo (J M Singer), from the University of North Carolina (S Bangdiwala), and from the Universidad Nacional de Rosario (M T Blanconá).

Session 3D The session *Teaching Heterogeneous Groups* organized by C Andersson, Germany and E Svensson, Sweden covered three presentations of very different types. A Porter, psychologist from UK talked about the Westminster experience in *Teaching statistics and research methods in heterogeneous groups.* .M L Berenson could not participate due to travelling problems, but his colleague and friend J McKenzie, USA gave an excellent presentation of Mark´s paper *Teaching academic diverse groups* integrated with own experiences and reflections. P Bidgood, UK, presented a teaching facility in *Creating statistical resources from real datasets- the STARS project.*

Session 3E *Multivariate Statistics* organized by J Harraway, New Zealand, covered the four presentations, *Analyzing DNA Microarrays with undergraduate statisticians* (J Harding, USA), *Sucessful strategies for*

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teaching multivariate statistics (J F Hair Jr, USA), *Basic multivariate themes and methods* (LL Harlow, USA), and *the Ludovic Lebart´s approach* (H Goldenhersch, Argentina).

Session 3F *Teaching Nonparametric Methods* organized by N Veraverbeke, Belgium covered smoothing techniques and experiences from teaching students in health sciences. The presentations were *Smoothing techniques in spatial statistics* (WG Manteiga, Spain), *Smoothing sequences of data by extreme selectors* (T de Wet, South Africa), and *Teaching non-parametric statistics to students in health sciences* (MJ Campbell, UK)

Session 3G *Teaching Consultancy skills to Statisticians* was organized by E Rothman (USA), and he talked about *Teaching students and staff consultancy skills. Practice improves presentations*, which also implies improved teaching skills according to F Joliffe (UK), and EE Alvarez (USA) presented experiences from a personal response system to students in the talk *Analysing data from a class taught with clickers.*

Session 3H *The session Statistics Learning with Cases/Projects* organized by J Pange, Greece, covered the titles *Teaching statistics and research methods: an integrated approach* (H van Buuren, The Netherlands), *Assessing and educating preschool teachers on probability concepts in the classroom* (J Pange), and *Making statistics real: working with Statistics New Zealand* (J Brown, New Zealand).

Session 3I *Teaching Bayesian Statistics*, organized by P Iglesias, Chile, and C Batanero, Spain, contained three presentations from Brazil and one from Spain. The titles were *Teaching independence and exchangeability* (LK Cordani, Brazil), *A Bayesian mathematical statistical primer* (JM Bernardo, Spain), *Unpredictability, probability updating and the three prisoners paradox* (R H Loschi, Brazil), and *Standard statistical concepts: can they produce incohererence?* (A A de Braganca Pereira, Brazil).

Session 3J Sampling for Surveys was organized by M Aliaga, USA, covered three topics of general interest. Capture-recapture sampling: a student project (BC de Sousa, Portugal), The role of scales in teaching statistics for social science students (P Sedlmeier, Germany), and Cluster optimal sample size for demographic and health surveys (A Aliaga, USA) were the titles.

Topic 4 Statistics Education/Training and the Workplace

Conveners: Pilar Martin-Guzman (Spain) and Pedro L do Nascimento Silva (Brazil)

Session 4A, on *Statistics education and the engineering world* was organized by Helen Louise MacGillivray. In it Jorge Luis Romeu presented a paper on *Teaching engineering statistics to practicing engineers*, Peter Martin, on *Achieving success in industrial training*, Georg Lindgren, on *Teaching modern engineering statistics: the contribution of collaboration and shared views of the roles of mathematical statistics in engineering* and Elena T Fernandez Carreras, on *Engineering statistics needs and engineering curriculum: an analysis.*

Session 4B, on *International cooperation in statistical training in the workplace*, was organized by José L Cervera-Ferri and Pilar Martín-Guzmán, and consisted on papers by Maria Meletiou-Mavrotheris on *Utilizing distance education to offer web-based professional development in statistics education to teachers across Europe*, Lyman McDonald, on *Experiences in consulting with Russian biologists on applications of statistical methods*, Enrico Giovannini, *Towards a more integrated international statistical system. The role of training* and Todd Evans*, International statistical training: how both large and small organizations can benefit from international cooperation.*

Session 4C, on *Statistics in medicine*, was organized by Reena Deutsch and Cynthia Long, and included papers by Abbas Bazargan, *Strengthening research and statistical skills of medical doctors through a hands-on approach: a case study from Iran*, Julia Maria Pavan Soler, *Bio-statistics teaching in the new genome era*, and Cynthia Long, *Training chiropractors for careers in clinical research.*

Session 4D, on *Statistics for future statisticians*, was organized by Celina Curti. It included papers by Ernesto Alfredo Rosa, *Training for applied statisticians*, Edith Seier, *Influence of consulting in the selection of topics*

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when teaching statistics, Lucia Pereira Barroso, *Teaching for applied statisticians*, and Julie Legler, *Educating future statisticians: awareness, diversity, service*.

Session 4E, *Statistics for environmental science*, was organized by Liliana Gonzalez, and included papers from Carmen Capilla, *Introducing data analysis in a statistics course in environmental science studies*, William Harper, *Visualization tools to aid in the understanding of geo-statistics*, Jennifer Ann Brown, *Teaching statistics to environmental scientists*, and Jean-Yves Hervé *Combining interactive visualization and statistics to detect patterns in environmental data*.

Session 4F *Improving the statistical literacy of users through their professional activities*, was organized by Rosa Giaimo, and included papers by Hans-Joachim Mittag, *The use of advanced visualization tools for communicating European data on earnings to the citizen*, Paul J. Mostert, *Changing approaches and perceptions: biostatistics and its role in teaching the Stellenbosch doctor*, and Alvaro Gonzalez-Villalobos, *Sample survey statistics teaching: an almost worldwide problem on teaching agricultural survey methods*.

Topic 5 Statistics education and the wider society
Conveners: Philip Boland (Ireland) and Brian Phillips (Australia)

This topic consisted of 8 sessions, with a total of 26 papers which addressed the ever-increasing need for citizens to be to be statistically literate in order to be well informed and knowledgeable about many important issues in the "Wider Society".

Session 5A *Statistical literacy: Concepts, gaps, indicators*, organized by Iddo Gal (Israel), was based on the notion that the development of statistical literacy requires alignment of conceptual frameworks, teaching/learning processes, systems of indicators and assessments, and an evidence base. Carlos Araujo (Chile) looked at statistical illiteracy in Latin America, Olga Leticia Escudero Lopez (Mexico) explained the kind of statistical culture offered by the Mexican educational system, Iddo Gal (Israel) discussed how statistically literate are adults based on large scale studies, and Enriqueta Reston (Philippines) probed college statistics teachers' statistical literacy instructional goals and practices.

Session 5B *Statistics education and the statistics profession*, organized by Neville Davies (United Kingdom), discussed activities of some statistical organizations. Len Cook (New Zealand) related some experiences in training statisticians in official statistical offices, and Brian Phillips (Australia) described a satellite meeting on statistics education and the communication of statistics. Due to travel problems, a paper that had planned to be given by Peter Petocz (Australia) on recognising and developing good statistics teachers, was replaced by a paper given by Neville Davies on some activities on the education section of the RSS.

Session 5C *Statistics and journalism*, organized by Mary Gray (United States), discussed issues concerned with the importance of the public being well informed about the bases for the judgments that heavily affect their lives. Susie ElSaadany (Canada) explained some challenges in modelling and communicating rare and emerging infectious diseases related to blood safety, Reija Helenius (Finland) described how Statistics Finland works together with the media, and Warren Palmer (New Zealand) looked at some current statistical reporting by journalists in New Zealand.

Session 5D *Statistics education and the world of life and health sciences* organized by Dalene Stangl (United States), included experiences and research on teaching Bayesian methods in the health sciences. Andrés Christen (Mexico) discussed teaching statistics basics to biology and health professionals through Bayesian ideas, Irina Arhipova (Latvia) looked at the role of statistical methods in computer science and bioinformatics, Keith Abrams (United Kingdom) explained teaching Bayesian methods in bio-medical research and Jennifer Freeman (England) was concerned with innovations when teaching statistics to non-statistics students.

Session 5E *Statistics in the social sciences - Psychology, Sociology*, organized by Geoff Cumming (Australia), discussed issues such as how should the statistics curriculum and teaching methods be developed to best serve students in the Social Sciences. Patrick Murphy (Ireland) looked at a non-standard approach to teaching an introductory Statistics courses to social science students, Annie Morin (France*)* described the intensive use of factorial correspondence analysis for text mining, Carmen Díaz (Spain)

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discussed psychology students' difficulties with conditional probability and Bayesian reasoning, while Fiona Fidler (Australia) suggested psychology students abandon p values and teach CIs instead.

Session 5F *Statistics in sport*, organized by Robin Lock (United States), used the fact that many students have a keen interest in sports - either as a participant or fan. This session explored ways to incorporate sports themes, examples and projects into statistics courses. Larry Weldon (Canada) used sports team quality as a context for understanding variability, Robin Lock (United States) showed how teaching introductory statistics can be based on sports examples as did Jerome Reiter (United States).

Session 5G *Statistics education in the financial and actuarial world*, organized by Juan Manuel López-Zafra (Spain), highlighted the need for statistical education both in the financial and actuarial areas. Philip Boland (Ireland) described statistical methods in general insurance, Juan Manuel López-Zafra (Spain) explored statistics education needed for actuaries and also presented a paper prepared by Ricardo Gimeno (from Spain but who was unable to attend due to travel problems) on statistics and finance.

Session 5H *Psychological and social issues in the teaching of statistics*, organized by Joseph Wisenbaker (United States), promoted grounding the teaching of statistics to its application in social and psychological issues. Jacky Galpin (South Africa) used examples related to HIV/AIDS to enhance the understanding of Statistical theory and their social implications, and Monique Bijker (Netherlands) described a comparative study of the effects of motivational and attitudinal factors on studying Statistics

Topic 6 Research in Statistics Education
Conveners: Maxinne Pfannkuch (New Zealand) and Chris Reading (Australia)

As well as presenting a variety of recent research into statistics education, the sessions in this topic also focused on research as a discipline in statistics education and on supporting those researchers who are new to the field.

Session 6A *Research on Statistical Reasoning and Thinking* was organized by Robert delMas (USA) and kindly chaired by Rosemary Callingham (Australia) in Bob's absence. Unfortunately Maxine Pfannkuch was unable to present her work on informal inferential reasoning due to illness but insights into students' reasoning were provided by Chris Reading and Jackie Reid for variation and Luis Saldanha for statistical inference.

Session 6B *Research on Probabilistic Reasoning and Thinking* was organized and chaired by Michel Henry (France) and provided a variety of papers from both the student and teacher perspective. The development of concepts from the students' perspective was reported by Sibel Kazak for probability, and by Blanca Hernandez for the random variable. Differing approaches to teaching probability were considered by Ciledo Coutinho from model-building perspective and by Helen MacGillivray from the constructivist perspective.

Session 6C *Research on Developing Statistical Literacy* was organized and chaired by Flavia Jolliffe (UK). After Jane Watson's exploration of the non-numeric aspects of statistical literacy, Kazuhiro Aoyama explained how a SOLO-based hierarchy had been used to describe graph interpretation; Oded Meyer provided details of online attempts to support the development of statistical literacy and Milo Shields shared some insights into high error rates when dealing with rates and percentages.

Session 6D *Researching Assessment in Statistics Education* was organized and chaired by James Nicholson (UK). Rosemary Callingham presented the re-analysis of assessment items to provide evidence of statistical literacy and Jim Ridgeway showed how computer facilitation helped students to deal with multivariate data. The development of ARTIST resources was presented by James Nicholson for Bob delMas, who was unable to attend.

Session 6E *Research on the Role of Technology in Learning and Teaching Statistics* was organized and chaired by Kay Lipson (Australia). Juan Godino gave a detailed view of the use of a simulation applet, while Sue Kokonis and Glenda Francis showed how Multimedia design research and cognitive theory had been used to enhance simulations. Andee Rubin drew distinctions between rule-driven and values-driven

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measures used by teachers to deal with distributions and Rachel Cunliffe reported on the interesting use of instant messaging to provide help-support services.

Session 6F *Theoretical Frameworks and Statistics Education Research* was organized and chaired by Tim Burgess (New Zealand). Unfortunately Anna Reid and Peter Petocz were unable to attend and present their exploration of various interpretative research paradigms. Antonio Estepo-Castro gave a detailed analysis of the textbooks in Spain to develop the meaning of statistical variation. This was followed by illustrations of various design heuristics from Koeno Gravemeijer and Tim Burgess's presentation of a framework for examining the knowledge of primary teachers as they teach statistics.

Session 6G *Research Methodologies in Statistics Education* was organized and chaired by Tjaart Imbos (The Netherlands). First, Paul Fields described computerized testing that individualizes to student needs. Then, Nick Broers argued for the unsuitability of statistical reasoning, thinking and literacy as learning goals and Luc Bude proposed a comprehensive, coherent knowledge as more indicative of levels of understanding than statistical reasoning, thinking and literacy which he described as ill-defined. Finally, Andreas Eichler proposed a five-step methodology for investigating individualized curricula. This session generated some lively debate.

Session 6H *New Researchers Mentoring Forum: Panel and Discussion* was organized by Joan Garfield (USA) but kindly chaired by Carmen Batanero. The session was attended by both new and "experienced" researchers, who were given interesting perspectives on researching and the varied backgrounds of some well-reknown researchers, namely, Michael Shaughnessy, Jane Watson, Carmen Batanero and Rolf Biehler.

Unfortunately, Cliff Konold was unable to attend. The efforts of the organizers and presenters in each session are appreciated as contributing to the success of Topic 6 and the various papers are recommended to all who are interested in research in statistics education.

Topic 7 Technology in Statistics education
Conveners: Andrej Blejec (Slovenia) Cliff Konold (United States)

Topic 7, *Technology in Statistics education* brought together presenters and researchers of the use of computers for statistics teaching. The sessions were well attended and usually followed with general discussions that sometimes expanded the presented areas.
The use of computers in statistics education is diverse, from the use of databases as the source for potentially interesting data and problems, web based guided data analysis tools, to the specific simulation environments, that are used to explore students understanding of basic concepts or for illustration of statistical concepts and methods. Presentations showed new developments of simulation and demonstration systems that are used in the teaching of spatial statistics, inference, regression modelling, confidence intervals, p-values, sampling distribution, 3-dimensional multiple regression, design and analysis of variance and probability by itself. The target population of presented approaches varies, from children in primary schools to students and teachers of mathematics.
The overall impression is, that the technology has great potential for statistics education, but the impact and effectiveness of teaching is not researched enough. Technology based learning environments by itself are not enough for effective teaching, student need careful guidance when the technology based systems are used interactively.

Session 7A *Building and using databases for student analysis*; Juana Sanchez (United States)
Presentations illustrated that the student population targeted, the purpose of the education and the guidelines followed, dictates the type of database a teacher uses to give students hands on experience analyzing real data. A statistics department catering students from many departments chose to use secondary data from the research of faculty in those students' departments; an economics department chose secondary data collected by official Statistics organizations; a math department inspired by the GAISE report recommendation, chose primary data from students' own experience; and an education department chose Census Data on GIS to create consciousness among students of the inequalities existing in their neighbourhoods.

Session 7B *On-line course and web-based instruction*; Gabriella Belli (United States)

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One of the authors summarized an experience in giving an internet course on the international level. Other papers were focused on special tools for teaching specific topic (power analysis) and concept maps as a useful educational tool that can be implemented either on the web or as standalone applications.

Session 7C *General purpose statistical tools for students*; Rolf Biehler (Germany)
Both presented papers (the third was cancelled due to the travel problems) were focused on understanding of probability distribution as a concept. Since both presenters are using the same simulation software (Fathom) and developers of that software were present, an interesting discussion about how to use the implemented possibilities followed the presentations.

Session 7D *Interactive software targeting specific statistical concepts*; Rodney Carr (Australia)
This section was probably the highlight of Topic 7. The importance of careful guidelines for students using interactive simulations was discussed. Impressive presentation of interactive 3-dimensional diagrams for multiple regression was followed by clear demonstration of controversies in understanding of confidence intervals and p-values. Last presentation focused on important aspect of dynamical changes and our perception. Excellent presentations were followed with interesting and lively discussion that combined all presented papers.

Session 7E *Technology-intensive curricula and instruction* Anthony; Paul Harradine (Australia)
The talks in this session provided insights into integration of simulation to enhance topics throughout an introductory statistics course through a combination of Minitab macros and specifically designed applets. Visualizations are naturally used in teaching of spatial statistical techniques and can be enhanced by use of dynamic geometry.

Session 7F *Principles and theories for the design of learning technologies*; David Pratt (England)
Two presentations showed some aspects of design of learning technologies with the emphasis on the use of computers. The integration of computers into classroom practice has been established as a complex process involving instrumental genesis whereby students and teachers need to construct potentialities for the tools as well as techniques for using those tools efficiently. Another paper showed practical use of modelling-and-simulation environment which frames both the design and the data analysis.

Session 7G *The role of simulations in Statistics education*; William Finzer (United States)
The presentations in this session showed very interesting examples of effectiveness of computer simulations in teaching statistics. The first paper explored the constructionist conjecture that the design of simulation tools will encourage designers as learners to reflect upon the statistical concepts incorporated in the tools under development, since generating data-sets on the basis of different characteristics, such as average, spread, or skewness, necessitates the making explicit of thinking related to these notions and the construction of some sense of random processes. Other talks showed effective approaches to use simulations to learn about inference, regression modelling and design and analysis of experiments. An interesting form of discussion, in which the audience was divided into discussion groups, was organized after the talks. Each group separately discussed the talks and was asked to present the summary of their discussion to the others.

Topic 8 Other Determinants and Developments in Statistics Education
Conveners: Beverley Carlson (United States) and Theodore Chadjipadelis (Greece)

Shir Ming Shen (Hong Kong) organized a Session 8A on *Mass media and statistic.* In the session, Fred Zandpour (United States) made an interesting presentation on the issue of the classroom training in statistical thinking. Philip Yu (Hong Kong) discussed a project that investigates the teaching and learning of statistics through the use of statistical figures commonly found in newspapers and other mass media. Lynda Merriman (New Zealand) presented a research centred on the teaching of a specially designed unit of work on statistical literacy to ninety Year 10 (14-year-old) high school students.

Jane L Hutton (United Kingdom) organized Session 8B on *Statistics and the law.* Maria Dolores Huete-Morales (Spain) provided an analysis of a direct method of statistics teaching in labour, social, juridical or economic studies. Janet Chaseling (Australia) made an excellent presentation on how teaching and

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communication in a court setting can best be implemented. David Lucy (Scotland) discussed data collection and analysis in Forensic Science.

Maria Meletiou-Mavrotheris (Cyprus) organized Session 8C on *Projects and Poster Competitions in Statistics Education*. Aklilu Zeleke (United States) presented a paper that shares how the process of statistical investigation is implemented into the project by using the students' own data. The experiences of a group of statisticians at Grand Valley State University who began a statewide statistics poster competition in 2000 is described by John Gabrosek (United States). Theodore Chadjipadelis (Greece) presents the results from the use of individual directed projects in the introductory statistics course at the Department of Political Sciences of Aristotle, University of Thessaloniki. The results indicate that students in the project-based group grasped statistical concepts and ideas at a higher rate.

 Given the need to convey the importance of *history and the teaching of Statistics*, it was very appropriate to have Maria-Gabriella Ottaviani (Italy) organized a session 8D on that. Ernesto San Martín (Chile) used Piaget's constructivism and its further developments as the conceptual framework to relate, in the learning process, students' age with specific topics in probability and statistics. Karen François (Belgium) sketch the history and the philosophy of statistics and probability theory and the connections to its political aspects. Mario Miguel Ojeda (Mexico) presented the evolution of teaching Statistics in the past century in México and Colombia, emphasizing the parallels and differences. Gilberte Schuyten (Belgium) presented a very informative paper in which she described the work carried out by IASE, and its role in promoting both statistics education and research in statistics education. It is mainly based on information available on the IASE web site, editorials and reports in the yearly IASE Reviews

Topic 9 An international perspective on Statistics education.
Conveners: Ana Silvia Haedo (Argentina), Delia North (South Africa)

The ICOTS conferences have been an ideal opportunity to springboard statistics education in developing countries by offering the knowledge of world experts to work collaboratively with local associations. It is particularly noticeable in countries from Africa, Asia and South America where the hosting of an ICOTS conference has increased the interest and awareness of statistics education.

Session 9A *Statistics teaching in South America* was organized by Ernesto Sánchez (Mexico) Problems concerning the teaching of statistics in South America were analysed. Different statistics programmes, experiences, strategies, and research projects in Latin-American countries were explored. Irene Maurizio Cazorla spoke about the qualifications of professional people who teach statistics in Brazil; Liliana Mabel Tauber analyzed the characteristics of teaching and learning statistics in colleges in a region of Argentina; Ernesto Sánchez the relationships between mathematics and applied statistics in Mexico; and Audy Salcedo explained the project to promote Spanish language publications on teaching statistics

Session 9B *Teaching Statistics in African and other developing countries.* This session originally organized by Rubén Cabrera didn't assist to the meeting and was coordinated by Ana Silvia, only two speakers turned up. The need for expertise in statistics in Africa cannot be emphasized, yet the subject is introduced at a latter date in schools or remains unrecognized. The subject is often introduced within the curriculum of mathematics in many education institutions in Africa. Victor Polakki fron Lesotho gave a good panorama of what happens at his country in high school analysing mathematics curriculum and text books. Feisal A.Yunis explored situation of factors influencing psychology students in statistics courses.

Session 9C *Statistics teaching in Asia* was organized by Delia North. Only two speakers turned up, Li Yun from China and Kazunori Ymaguchi from Japan. The problem was just that the session was very poorly attended which was a pity as Li Jun in particular was excellent and Yamaguchi's talk about course using new technologies was also very interesting.

Session 9D *Census at School* was organized by Doreen Connor from the United Kingdom. CensusAtSchool, the real data project for 7 to 16 year olds, has now been implemented in many countries including South Africa, Queensland, New Zealand, South Australia, Norway, Italy and Canada. It is going from strength to strength in the UK from its inception in 2000. This session highlight successes, challenges and lessons

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learnt from using CensusAtSchool at Canada told by Mary Townsed , Soo Kong from Australia and Emma Knigths at the United Kingdom.

Topic 10 Contributed papers
Conveners: Alan McLean, Joachim Engel

The contributed papers were an undoubted success story of ICOTS 7, with a considerable increase over the numbers at ICOTS 6. With about 200 initial enquiries, about 180 abstracts were received. Of these, there were 149 final papers which were accepted. Of these, papers from 51 contributors were accepted as Refereed Papers and from 76 as Unrefereed Papers. (Some contributors were involved in multiple papers.) A considerable number of the papers were promoted to be Invited Papers, leaving 105 in the final schedule. The topics covered in the papers were very wide in range.

Dealing with these numbers of papers involved some considerable organization (which we developed as we went along). Because many of the contributors were inexperienced, there was a considerable need to provide some mentoring, which we were happy to do; we also had some language difficulties. Overall it was, for us, a very rewarding experience, and a great pleasure to see the papers presented.

Topic 11 Posters
Conveners: Celi Espasadin Lopes and Carmen Batanero

Posters presentation was one of the most successful activities. One hundred and forty three posters were presented at the conference and dealt with the most varied topics: Statistics education at school and Universities, technology, research, education of teachers, working with projects, etc. Two sessions were dedicated to present the posters that covered a wide area of the exhibition hall.

Eighty three of these posters were presented by Latin American participants who, for the first time attended an ICOTS conference and were proud to present their high quality work to an international audience and share the experiences run in many different Universities and institutions in Brazil and other countries (Argentina, Chile, Colombia, Costa Rica, Honduras, Mexico, Panama, Peru, Venezuela).

Twenty six of the posters were presented by South African school teachers who also attended for the first time an ICOTS conference. The South African Statistical Association and Statistics South African organized a competition for school teachers in order to raise both their statistical competence and their interest to teach statistics. Winners were invited to attend ICOTS and present their experiences in a poster. The South African delegation included members of the two institutions as well as other statistics educators.

Special Interest Group Meetings
Report by Carmen Batanero

A new activity in ICOTS 7 were the Meetings of Special Interest Groups of people who were interested in exchanging and discussing experiences and/ or projects concerning a well-defined theme of common interest. Each of them met two times at the conference.

Three of these groups were specifically oriented to reinforce Latin American statistics education cooperation and were held in Portuguese and Spanish language: *SIG1'Training Mathematics teachers to teach Statistics in Spanish and Portuguese speaking countries* (Organized by Teresita Teran, Argentina) *SIG2 'Young Latin American researchers in Statistics education'* (organized by Cileda Coutinho, Brazil and Blanca Ruiz, Mexico) and *SIG4 'Curricular development in Statistics education in Latin America'* (organized by Olga Leticia Escudero, Mexico and Clayde Regina Mendes, Brazil). They started working one year before ICOTS-7 via Internet forums and met twice during the conference to present and discuss reports from participants.
They have joined in one Internet forum after the conference and continue working on the web. Members plan to meet in other Latin American meetings, e.g. the First Statistics Education Meeting in Colombia (Universidad Pedagógica Nacional, Bogotá, Colombia. April, 26-28, 2007), the Statistics Education Seminar that will be held in Argentina in May, 2007 and RELME (Latin American Mathematics Education) conferences.

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Another Special Interest Group gathered participants in the *International Research Forum on Statistical Reasoning, Thinking and Literacy* and was organized by Dani Ben-Zvi, Israel and Joan Garfiel, USA.

4.3 Some memories and interview with Flavia Jolliffe

Photographs

Left: three dedicated ICOTS participants. From left to right: Flavia Jolliffe, Albert Shulte and his wife Joann.

Right: Five IASE presidents. From left to right: Gabriella Ottaviani (president 1997-1999), Brian Phillips (president 1999-2001), Carmen Batanero (president 2001-2003), Chris Wild (president 2003-2005) and Gilberte Schuyten (president 2005-2007)

Interview with Flavia Jolliffe, the delegate who has attended all seven ICOTS.

Q1. What prompted you to go to the first ICOTS?
About the time that Teaching Statistics started in 1979 I began to question whether the statistics I was teaching was appropriate for some of the groups of students, and to think about how to teach understanding and concepts and to motivate students to learn statistics. The first ICOTS in 1982 was a good opportunity to follow up these matters and, moreover, was held in my own country.

Q2. What ICOTS event/talk had the greatest impact on me?
There have been too many that I have found useful and helpful to single out any.

Q3. What changes stand out most?
The obvious big changes are the opportunity to have papers refereed, and publication of proceedings on CD and the web. There have also been changes of emphasis in topics, particularly ones associated with changes in technology, and there are now more sessions on statistics education research.

Q4. Why do I keep going to ICOTS?
They have been held in places and countries that I wanted to visit, I always meet with friends I have made at previous conferences, and now there is the challenge to be the delegate who has attended all the ICOTS!

Q5. Anything else?
 A few memories associated with past ICOTS - Peter Holmes selling copies of The best of Teaching Statistics market stall fashion at the end of ICOTS2, a week of rain and cold at ICOTS3 in Dunedin, a spectacular Arab style conference dinner and entertainment at ICOTS4 in Morocco, and the song of the South African school teachers at the closing ceremony at ICOTS6.

Interview by Brian Phillips

5. International Statistical Literacy Project (ISLP) undergoing a transition

5.1 Special IASE thanks to the first ISLP Coordinator, Carol Joyce Blumberg, and welcome to new ISLP Director, Juana Sanchez.

IASE would like to thank our departing ISLP coordinator, Carol Joyce Blumberg who has been the first coordinator of ISLP since July 2001. She has devoted time and energy to ISLP as she managed a continuous flow of information and structured all this into a very interesting website. Under her leadership the ISLP website became one of the gateways to IASE on the Internet.
A very warm thank you for this Carol!
IASE hopes to continue to rely on Carol's ongoing moral support and expertise in statistics education.

It is with great pleasure that the IASE announces the appointment of Juana Sanchez as the new Director of the ISLP. She is highly qualified, very enthusiastic about the project and is an expert on web-based materials. We wish her a productive and enjoyable time ahead in directing ISLP to in its next stage of evolution.

Gilberte Schuyten, President IASE

5.2 Transition report
Carol Joyce Blumberg, Energy Information Administration (USA)

Carol Joyce Blumberg retired from Winona State University and now works for the US Department of Energy as a Mathematical Statistician in the Energy Information Administration. Because of this change in jobs, she decided to no longer be the Coordinator of the ISLP. A search committee consisting of Chris Wild (Chair), Iddo Gal (Israel), and Carol Joyce Blumberg was appointed by the IASE President, Gilberte Schuyten. The committee developed a position description. This position description was sent to all IASE members with email addresses on file and to non-IASE members on a list of those interested in the ISLP. Applications were received by the committee.

Juana Sanchez of the University of California, Los Angeles (UCLA) in the USA was selected by the committee as the new Director. Her appointment as the new Director of the ISLP was confirmed by the IASE Executive Committee.   Dr. Sanchez has accepted a four-year appointment from January 1, 2007 to December 31, 2010. She and Stephen Cope (webmaster for the Department of Statistics at University of Auckland, New Zealand), however, have already done a great deal of work in making the website more user-friendly and more modern. It is now located at
 http://www.stat.auckland.ac.nz/~iase/islp/ and is wiki-based.

Thank Yous

The following people have served as page co-ordinators over the last year: General Resources and Definitions (Carol Joyce Blumberg, USA and Ken Shimabukuro, Bolivia); Assessment (Sara Finney, Kenn Barron, and S. Jeanne Horst, USA), Recently Published Articles/Report Useful for Teaching Statistics and Resources for Those Training Teachers (Eunice Goldberg, USA), Training Programs and Learning Materials from National and International Statistical Offices (Reija Helenius, Finland), Listing of Statistical Literacy Projects Around the World (Paola Giacché, Italy), and Children's Censuses (Neville Davies, UK).

The ISLP has also been aided within the last year by advice from the ISLP Advisory Committee consisting of Beverley Carlson (USA/Chile), Vicki Crompton (Canada), Paul J. Fields (USA), Iddo Gal (Israel), Enrico Giovannini (Italy/France), John Harraway (New Zealand), Lesley Hooper (New Zealand), Soo Kong (Australia), Olajide Ezekiel Okunola (Nigeria), Maria A. Pannone (Italy), René Padieu (France), Enriqueta Reston (Philippines), René H. M. Smulders (The Netherlands) and Christopher Wild (New Zealand). Gilberte Schuyten (Belgium, IASE President), Allan Rossman (USA, IASE President-Elect), Daniel Berze (Director, ISI Permanent Office) and Shabani Mehta (Administrative Projects Officer, ISI Permanent Office) served as

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Ex-Officio members of the committee. In addition, Tasfia Ahmed (a third-year student in Engineering at Winona State University and a native of Bangladesh) assisted with the maintenance of the web pages and several other tasks over the last year.

5.3 The future directions of the ISLP
Juana Sanchez, UCLA (USA)

When Carol Blumberg took over as chair of the ISLP in July 2001, it was decided by the IASE Executive Committee that one of the main projects of the ISLP would be the creation of a website. Since then until 2006, under the leadership of Carol, the ISLP web page took shape and became the most comprehensive repository of information on Statistical Literacy resources around the world. Thanks to Carol, the members of the advisory committee and the page coordinators mentioned above, the ISLP has a website rich in resources and a venue to communicate information to those interested and/or involved in Statistical Literacy. Mission accomplished, Carol !! Those of us staying in the leadership will maintain, increase, and promote the use of this repository. We are very lucky that Carol has decided to stay in the Advisory Board of ISLP and to continue participating as page coordinator. It is comforting to know that her inspiration will keep guiding us.

The future directions of ISLP can be summarized by three overlapping phases: (a) a Phase I where the web site will move from being a source of information to becoming a forum of communication, and where the role of the page coordinators and the Director will be one of matching those in need with a resource near them that can satisfy their needs; (2) a Phase II, concurrent with Phase I, where there will be a wide promotion of this new role of ISLP via meetings, brochures, electronic mail lists and postings at numerous sites with the help of the IASE community; (3) a Phase III, also somehow concurrent, where the ISLP will reach those without access to the Internet via partnerships with those that have access and their communities' organizations. ISLP will seek a presence in business fairs, schools, fire departments and small groups. Simultaneous with all these phases there will be efforts to obtain donations from other organizations of time and materials for our brochures, our programs and the services that we provide. And of course, ISLP will be at major international gatherings of Statisticians.

Phase I and Phase II

 During the period 2001-2006, while the web site was being created and taking shape, the Internet evolved to unexpected ways. It offers now numerous possibilities for direct communication among people. One of them is the wiki environment where everybody with access to a browser can write their thoughts and ideas directly into a web page as if they were writing a document in their favourite word processor. We decided that *in Phase I of the post-2006 ISLP, we are making* **the ISLP web page a forum open for editing by the community**, *to make it more efficient in its role as a means of communication and sharing information.* Institutions, societies and members can enter information they know directly into the different pages of the ISLP website, and this will contribute to a richer set of resources while giving us more information about what people need. We will maintain the previous sections within the website (i.e. Children Census, assessment, secondary school, etc) and add others, but the role of page coordinators will change. *Page coordinators now are "project coordinators" in the sense that their role is: (a) monitoring the traffic and editing of their project's web page by others to guarantee legitimacy of everything posted; (b) answering the questions posted on their website by people or directing those questions to whoever can answer them in the ISLP; (c) emphasizing topics for those approaching their page for the first time and keeping a current web site where people know where to find what they need on their subject. The Director, Juana Sanchez, manages all the traffic that has no particular destination and overseas the whole website.* Please, log in to the ISLP web site and tell us what we don't know yet about statistical literacy or what needs you have in that area. *With our resources, we will try to match you with a project, a country, an author or a particular resource.* No other statistical literacy organization does that.

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To achieve the goal of Phase I of ISLP mentioned above, we are changing the tone of the ISLP web site somewhat. Our language is becoming more welcoming to non-professionals. Don't be set aback if you enter our page and you see a note to parents, or surfing clubs. There will also be a message for educators, national organizations, national societies, the media, students and many others, too. But we want to expand our set of customers. With the proliferation of statistical literacy sites in some countries and the deficiency still existing in many others, our role is to encourage the synergism among those who have it and those who don't and to spread statistical literacy by filling the current vacuums and reaching the members of the communities that need statistical literacy.

For the ISLP web site to become the forum of communication between those with literacy needs and those who can help, we need to **promote** it as such, not only among those who can provide literacy and already deal with statistics but also *among the public at large*. Statistics is an often misunderstood science. Many times we are asked the question: "what do Statisticians really do?" We at ISLP have, in our web page, a great deal of resources to inform those with intellectual curiosity about what Statistics is for today's society and what they can do to understand current problems with it. Our home page should convey that message. *We provide a service that no other statistical literacy site does: we can direct anyone in the world to the right statistical literacy project for them.* But to make people go to our home page we will do more than pay Google to put us higher in their rankings, which we will not do, or make our members click many times on our site. During *Phase I and II* of ISLP we will promote the ISLP web site with *brochures mailed to schools, neighbourhood organizations, companies, and small institutions as well as distribute them at professional meetings and in the Statistical offices of the countries where those professional meetings are held. We will make sure that every community has a link to our web site in their web page by many means of promotion (mass emailing, advertising at existing literacy sites and other informative sites). Our venue for such distribution is you, the members of the IASE in your community.* Help us advertise our service in your community by distributing our message to email lists you communicate with. We will make the ISLP web site multilingual to make this task easier.

Phase III: ISLPers without borders

There is a *Phase III.* A web page these days is the main tool of communication and of sharing information for those who have access to the Internet all the time. But *many people still don't use the Internet much*. We have a mission to accomplish beyond informing online, establishing matches between those in need and those capable of satisfying those needs,   and keeping in touch with each other, and providing a forum. We want to bring statistical literacy to remote places on earth and to places close to all of us, to improve everybody's lives. To achieve that, *during Phase III we will work at the micro-scale by establishing partnerships with local institutions that may think that via statistical literacy they may encourage groups to obtain more education.* Our presence at professional meetings will go beyond informing and debating who we are; we will proactively interview the people we meet to ask them where they believe the gaps in statistical literacy are, and how could we partner to help each other. Nobody knows their neighbourhoods better than the people living in them. *The same way that health organizations go into businesses, schools, police departments and other places remote to the classroom to promote good health habits (and at the same time bring people to their institutions), we will offer informational meetings at similar places*. And perhaps, if we obtain some funding for it, bring some goodies along, for everybody to remember us beyond the meeting. *When ISLP goes to a professional meeting in any country, ISLP will also visit a school or a work place, or a church, or any other small community to talk about how statistics touches what is important in their lives. We will widely advertise that ISLP is in the neighbourhood.*

Funding Strategies

In the past, the ISLP has attempted to obtain funding for many projects, with mixed success. We will not seek big funding at first. There is a lot that we can do with our web page promotion and our physical presence in countries when we visit a meeting without any funding. But *we will seek some funding*. These days there are many projects that we all do that involve statistics education for which we obtain small grants. Perhaps we can incorporate in those projects for which we obtain funding a small part with a statistical literacy component attached to the ISLP. For example, many universities have Community Action Grants, where a teacher can obtain funds to partner with some community agency and work on achieving an education goal together (maybe increasing the amount of students applying to universities). ISLP could be the third partner agency in

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such grants. *If you are seeking grants for some educational endeavour in your community or school, consider partnering with ISLP. We can help you in the preparation of your grant with our informational resources and we can bring you an international component that may help your grant be funded. In return, perhaps you can budget in your grant some money for ISLP to print more brochures, or to bring some expert from the many literacy projects that we compile to participate in your project. If many people put a little money in their grants for some of our logistic expenses, we all will win.*

ISLP will also organize some races, dances and activities at international meetings as well as contests with prizes to collect some resources that will help us achieve our goals. Come to our information meetings in the conferences you go to. We will advertise our presence at these meetings in the ISLP web site.

How you can help

We count on all of you for ISLP to achieve its goals. To start with, come and see us at the informational meetings and tables that we will have at the ISI Biennial Session in Lisboa, the IASE Satellite Conference in Guimarães, and at the ASA (American Statistical Association) meetings in the United States, and at many other international meetings. We can talk about how you can help there or you can just email us. There are many ways in which you can help: (a) you may consider volunteering to be a project coordinator. We are currently seeking new leaders. We will put your picture in our web site, will put a link to your place of work, will make you well known to the community; (b) you may know of a local organization that would like to obtain information about what statisticians do and how they can help, so you can tell us about them and put us in contact with them for us to help them; (c) you may be writing an educational grant and are considering our help and sponsorship in preparing it; (d) you may have new ideas about how the ISLP web site can be improved; (e) you would like to help us distribute our brochures in the places you live and promote our site in the web pages and email lists you are in; (f) you are a representative of a statistical office, a teacher, a student, a government statistician, or any of our customers, and want to update us on your resources. Please, contact the Director of ISLP, Juana Sanchez (jsanchez@stat.ucla.edu), if you want to become involved in any of the above or other ways. Any little thing you do will be of interest to all.

6. SERJ report to the IASE Review

Overall, the Journal is doing well and anticipates a period of growth ahead.

Editorial board: Several important changes have occurred over the last 12 months:
- Flavia Jolliffe has ended in Dec 2005 her 4-year term as co-editor. The Editorial board has thanked Flavia for her dedication, hard work, and contribution to SERJ.
- Tom Short, Indiana University of Pennsylvania (USA), started in Jan 2006 as co-editor for a 4-year term, after selection by a search committee appointed by IASE.
- Chris Reading ended her 4-year term as Assistant Editor (in charge of all final editing and production). Chris was replaced by Beth Chance (Cal Poly, USA).
- Four members were added to the editorial board, which now includes 16 members and the two co-editors. This was done to expand the expertise base of the board, and in light of anticipated departure of some board members who have been on the board since its inception in 2002.
- Early next year a search has to start for a co-editor to replace Iddo Gal whose term ends in 2007.

Manuscript flow: In Oct 2004-Oct 2005 we received 22 papers. Of these, 8 were found not suitable for SERJ and were not refereed; 5 had potential but needed revision even before refereeing, 3 rejected, and 3 to be rewritten and resubmitted; Only 5 have been published by now. The flow of manuscripts has increase in 2006 and new submissions almost doubled since Oct 2005, including papers submitted for the special issue on Reasoning about Distribution, Nov 2006.

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Activities and changes: At ISI-55 in Sydney, SERJ arranged a workshop for prospective authors to educate about writing high-quality research papers. At ICOTS-7 in Salvador, Brazil, SERJ arranges two workshops, a similar one for prospective authors, and a new innovative one for referees (old and prospective) on writing good reviews. Work also continues on revised guidelines for authors and referees and on the journal's website.

Summary: The editors see the increased flow of papers and increased diversity of authors as evidence that the journal is gaining in status and recognition in an emerging area of research and practice. We hope the combined activities and marketing of SERJ, and the growing flow of papers, will increasingly position SERJ as the premiere journal in our area.

Iddo Gal and Tom Short, co-Editors
November 10, 2006

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7. The Joint ICMI/IASE Study
Carmen Batanero, Chair

7.1 Announcement and Call for Conference Papers

The International Commission on Mathematical Instruction (ICMI, http://www.mathunion.org/ICMI/) and the International Association for Statistical Education (IASE, http://www.stat.auckland.ac.nz/~iase/) are pleased to announce the Joint ICMI /IASE Study *Statistics Education in School Mathematics: Challenges for Teaching and Teacher Education*. Following the tradition of ICMI Studies, this Study will comprise two parts: the Joint Study Conference and the production of the Joint Study book. The Joint Study Conference will be merged with the IASE 2008 Round Table Conference.

The Joint Study Conference (ICMI Study and IASE Round Table Conference) will take place at the Instituto Tecnológico y de Estudios Superiores. Monterrey, Mexico (http://www.mty.itesm.mx/), from June 30 to July 4, 2008. Participation in the Conference is only by invitation, based on a submitted contribution and a refereeing process. Accepted papers will be presented in the Conference and will appear in the Proceedings that will be published by ICMI and IASE as a CD-ROM and on the Internet.

The second part of the Joint Study – the Joint Study book – will be produced after the conference and will be published in the ICMI Study Series. Participation in the Joint Study Conference does not automatically assure participation in the book, since a second selection and rewriting of selected papers will be made after the conference.

Proposed papers for contributions to the Joint Study Conference should be submitted by e-mail no later than October 1, 2007, to the IPC Study Chair (Carmen Batanero, batanero@ugr.es). Papers should be relevant to the Joint Study focus and research questions, as described in the Discussion Document (which is available at the **Joint Study Website** (http://www.ugr.es/~icmi/iase_study/). Guidelines for preparing and submitting the paper are also available in the Discussion Document at the website. Please address questions to Carmen Batanero, batanero@ugr.es.

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International Programme Committee

Carmen Batanero (Spain, Chair), Bernard Hodgson (Canada, representing ICMI), Allan Rossman (USA, representing IASE), Armando Albert (México), Dani Ben-Zvi (Israel), Gail Burrill (USA), Doreen Connor (UK), Joachim Engel (Germany), Joan Garfield (USA), Jun Li (China), Maria Gabriella Ottaviani (Italy), Lionel Pereira Mendoza (Singapore), Maxine Pfannkuch (New Zealand), Mokaeane Victor Polaki (Lesotho), and Chris Reading (Australia).

7.2 Discussion Document (shortened version)

*The complete discussion document with all references is available at the **Joint Study Website** (http://www.ugr.es/~icmi/iase_study/.*

Background

Since the mid-1980s, the International Commission on Mathematical Instruction (ICMI, http://www.mathunion.org/ICMI/) has found it important to involve itself directly in the identification and investigation of issues or topics of particular significance to the theory or practice of contemporary mathematics education, and to invest an effort in mounting specific ICMI studies on these themes.

At the same time, in the past three decades a statistics education research community has developed, linking people from various backgrounds (statisticians involved in teaching statistics in service courses at the university, mathematics educators, and psychologists), leading to the creation of the International Association for Statistical Education (IASE, http://www.stat.auckland.ac.nz/~iase/) in 1991.

Conversations between ICMI and the IASE made clear there was a common interest in organising a Joint Study related to current problems in the teaching of statistics within school mathematics. This interest arose from the fact that, in spite of recommendations to increase the presence of statistics teaching at the school level, students in these levels do not acquire a statistical literacy adequate to function in an information-based society and to progress in the study of statistics at higher levels such as university or professional training.

The invitation from ICMI to collaborate on a Joint Study was accepted by the IASE. Subsequently, IASE suggested that this Joint Study merge with the next IASE Round Table Conference (June 30-July 4, 2008, Instituto Tecnológico y de Estudios Superiores, Monterrey, Mexico), just before the Eleventh International Congress on Mathematics Education (ICME-11; Monterrey, Mexico, July 6-13, 2008).

Justification

The situation of teaching statistics at the school level

Today statistics is part of the mathematics curricula for primary and secondary school classes in many countries. The reasons for including statistics teaching have been repeatedly highlighted over the past 20 years (e.g., by Holmes, 1980; Hawkins, Jolliffe & Glickman, 1991; Wild & Pfannkuch, 1999; Gal, 2002; Franklin et al., 2005): usefulness of statistics and probability for daily life, its instrumental role in other disciplines, the need for a basic stochastic knowledge in many professions, and the important role of statistics in developing critical reasoning.

The tendency towards a data-orientated teaching of statistics is shown in the curricular orientation for primary school levels where students are expected to design investigations, formulate research questions, collect data using observations, surveys, and experiments, describe and compare data sets, use and understand statistical graphs and measures, propose and justify conclusions and predictions that are based on data (e.g., NCTM, 2000; SEP, 2006; Lajoie, 1998; Burrill, 2006; Burrill & Camden, 2006). These documents focus on developing statistical reasoning, which is different from mathematical reasoning, both of them being essential to modern society and complementing each other in ways that strengthen the overall mathematics curriculum for students (Gattuso, 2006; Scheaffer, 2006).

However, these curricular recommendations are hardly ever followed, as the teaching of statistics is frequently reduced or forgotten and, at best, taught in a formal way with few examples of real applications (Meletiou, 2003). The teaching of statistics often consists of only doing computations or proving mathematical

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theorems with scarce opportunity to design experiments, analyze data or connect statistics with the general process of inquiry. As a consequence, students finish secondary school with little understanding of basic principles underlying data analysis, which explains many of the problems they encounter in the use of statistics in their everyday and professional lives or in statistics courses at the university level.

Challenges in the initial training and ongoing professional development of teachers

Changing the teaching of statistics in schools will depend on the extent to which we can convince teachers that statistics is one of the most useful themes for their students (Gattuso, 2006). A better preparation of these teachers, who frequently lack specific preparation in statistics education, is also required (Russell, 1990; Gattuso & Pannone, 2002; Mendonça, Coutinho, & Almouloud, 2006). Even when many prospective secondary teachers have a major in mathematics, they usually study only theoretical (mathematical) statistics in their training. Few mathematicians receive specific training in applied statistics, designing sample collections or experiments, analyzing data from real applications or using statistical software. These teachers also need some training in the pedagogical knowledge related to statistics education, where general principles that are valid for geometry, algebra or other areas of mathematics cannot always be applied (Russell, 1990; Batanero, Godino & Roa, 2004). The situation is even more challenging for primary teachers, few of whom have had suitable training in either theoretical or applied statistics, and traditional introductory statistics courses will not provide them with the didactical knowledge they need (Franklin & Mewborn, 2006).

Research in statistics education shows that textbooks and curriculum documents prepared for primary and secondary teachers might not offer enough support. Sometimes they present too narrow a view of concepts (for example, only the classical approach to probability or inference is shown); applications are at other times restricted to games of chance or are not based on analysis of real data; finally in some of them the definitions of concepts are incorrect or incomplete (Moncecchi & D'Argenzio, 1994; Cardeñoso, Azcárate & Serradó, 2005).

Attention should also be paid to teachers' statistical conceptions and beliefs. Research in statistics education is showing that many teachers unconsciously harbour a variety of probabilistic and statistical difficulties and errors (misconceptions) that might be shared with students (Rubin & Rosebery, 1990; Makar & Confrey, 2004; Stohl, 2005). There is little opportunity for teachers' professional development in statistics, due to the lack of practice in either teaching this topic or applying statistics to analyse educational data. As a consequence, teachers might realise their need for further professional development in statistics (Watson, 2001; Gattuso & Pannone, 2002; Mendonça, Coutinho & Almouloud, 2006) or even feel uncomfortable in teaching this topic and consequently have a tendency to reduce or omit it. The pedagogical content knowledge required for teaching and the way teachers use their statistical knowledge when teaching statistics should also be taken into account (Mickelson & Heaton, 2004).

The significant research efforts focusing on mathematics teacher education and professional development in the past decade have not been reflected in statistics education. This is evident in conferences (e.g., the ICMI Study 15), journals (e.g., *Journal of Mathematics Teacher Education*), surveys, and books that hardly take into account the particular case of statistics. This omission needs to be addressed by promoting research specifically focussed on the education and professional development of teachers to teach statistics (Shaughnessy, in press).

Specificity of statistics education

The above problems do not just concern mathematicians or mathematics educators. On the one hand, statistical offices in charge of producing statistics for a variety of applications in social, industrial, political, scientific or everyday life are increasingly concerned about the *statistical illiteracy of citizens.* These citizens are often unable to correctly interpret simple statistical information presented in the press, Internet and other media, and they are not always willing to cooperate in providing sound data needed to produce these statistics, for example the census. As a consequence there is an increasing involvement of statistical offices and associations in producing materials and organising actions that help increase statistical literacy (e.g. Barbieri & Giacché, 2006; Ottaviani & Rigatti, 2006), that is, the ability to understand and critically evaluate statistical results that permeate our daily lives-coupled with the ability to appreciate the contribution that

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statistical thinking can make in public and private, professional and personal decisions (Wallman, 1993; Gal, 2002).

On the other hand, the strong specificity of statistics education is reflected in the philosophical, ethical, procedural and even political questions that are still being debated within statistics and its applications, which do not happen in other areas of mathematics. Statistics is much more closely related than mathematics to other sciences (from linguistics or geography to physics, engineering or economy) where it is used as the language and method of scientific enquiry and from which many statistical methods were developed. In this sense it is also easier in statistics than in mathematics to establish connections with other school curricular areas and sometimes it has been argued that statistics should be taught outside the mathematics classroom (Pereira-Mendoza, 1993).

Statistics is separate today from mathematics at the university level in many countries where distinct majors are offered in the training of mathematicians and statisticians. Statistics research encompasses a variety of institutions, conferences and journals. Finally, we cannot ignore the wide contributions to research in statistics education from areas other than mathematics, for example in statistics, psychology and education in other fields (Vere-Jones, 1995; Shaughnessy, 1992; Shaughnessy, Garfield & Greer, 1996; Batanero, 2004; Jones, 2005; Shaughnessy, 2006, in press). Moreover, there has recently been a large increase in statistics education research outside the mathematics education community. Although the topic of training teachers has been considered (e.g., Hawkins, 1990; Watson, 1998; Friel & Bright, 1998), there has not been a sustained effort in exploring, explaining and improving teachers' statistical conceptions, attitudes and beliefs. Given the increasingly prominent role of statistics in both curricula and daily life, it is essential that statisticians, mathematicians, mathematics educators and others collaborate on the design and implementation of teacher education programs for both pre-service and in-service mathematics teachers (Franklin & Mewborn, 2006).

Focus

The above rationale led the International Commission on Mathematical Instruction (ICMI) and the International Association for Statistical Education (IASE) to start the process of organizing a Joint Study to *analyze the teaching of statistics at school level and make recommendations about how to improve the training of mathematics teachers to better succeed in educating statistically literate students*. This specific Study brings the mathematics and statistics education communities together to work in collaboration on a common problem and might serve to continue this collaboration in future work.

The Joint Study reflects on the specificity of statistics teaching at the school level and teachers' learning, and provides an overall picture of the current situation in both the teaching of statistics in schools and the pre-service education of mathematics teachers. We intend to develop research questions and invite new research to produce some recommendations and materials that can be used in the training of both prospective teachers at university level and in-service teachers who have never had an adequate preparation to teach school statistics. Since initial teacher training in the area of statistics is constrained by time, the Joint Study will concentrate on defining the essential elements of statistics, didactic knowledge and experiences for teacher learning. Statistics taught at the university or professional education levels will not be considered in order to restrict the focus of the Study to a more manageable scope.

Statistics and probability are linked in school mathematics in many countries and within mathematics theory and practice. For this reason, some references to probability will be unavoidable in the Study, in particular when dealing with statistical inference. However the Joint Study is not focussing on probability itself. Instead we will build on some previous work, such as the recent international survey book on teaching probability at school levels edited by Jones (2005).

This Joint Study is related to the ICMI Study 15, *The Professional Education and Development of Teachers of Mathematics* in the sense that it focuses on mathematics teachers and therefore, many of the conclusions of the above Study can also be applied to the case of statistics. A primary difference is that we will concentrate on specific content for the curricula for teachers' initial training which is largely absent at the present time. We will focus on this initial training, since, as argued above, there has been little chance for professional development in teaching statistics to date. However, papers describing successful examples of

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professional development in teaching statistics are also welcome. The Joint Study is also supported by the work at the IASE Round Table conference on curricular development in statistics (Burrill & Camden, 2006) and the International Statistical Institute Round Table conferences on Training Teachers to Teach Statistics (Hawkins, 1990) and on Introducing Data Analysis into Schools (Pereira-Mendoza, 1993).

Audience and potential participants

We hope the Joint Study results can be useful for both mathematics and statistics educators, including in-service teachers, students preparing to be teachers, teacher educators, people involved in curricular development in statistics as well as researchers in statistics and mathematics education.

A specification of the Joint Study is its inter-disciplinary character, and therefore, we expect participation from mathematicians, mathematics educators, and statisticians, including official statisticians working at statistical agencies, as well as psychologists and teachers of other disciplines where statistics is used as a tool. We are specifically interested in inviting people with different levels of experience, including people who are well known in the area, some new researchers who are just forming their views, and some teacher trainers who are training the future mathematics teachers who will be delivering statistics at school levels.

Topics

The Joint Study will be structured around six different topics, each organized by two members of the International Programme Committee.

- *Topic 1. The current situation of teaching statistics in schools.* Organizers: Dani Ben-Zvi (dbenzvi@univ.haifa.ac.il) and Chris Reading (creading@une.edu.au)
- *Topic 2. Teachers' attitudes, knowledge, conceptions and beliefs in relation to statistics education.* Organizers: Carmen Batanero (batanero@ugr.es) and Gail Burrill (burrill@msu.edu)
- *Topic 3. Analysing current practices in teacher education regarding the teaching of statistics.* Organizers: Doreen Connor (doreen.connor@ntu.ac.uk) and Lionel Pereira-Mendoza (lionel@iammendoza.com)
- *Topic 4. Empowering teachers to teach statistics: A look into the future. Organizers*: Joachim Engel (engel@ph-ludwigsburg.de) and Maxine Pfannkuch (pfannkuc@math.auckland.ac.nz)
- *Topic 5. Training teachers in developing countries.* Organizers: Jun Li (lijun@math.ecnu.edu.cn) and Victor Polaki (mv.polaki@nul.ls)
- *Topic 6. Building collaboration between mathematics and statistics educators in teacher education.* Organizers: Joan Garfield (jbg@umn.edu) and Maria Gabriella Ottaviani (mariagabriella.ottaviani@uniroma1.it)

Both theoretical reflections about what such training might look like and analyses of existing successful examples of experiences in training teachers to teach statistics in any of the above Topics are welcome. Topics and details for preparing and submitting papers are included in the full Discussion Document available from the web site at http://www.ugr.es/~icmi/iase_study/).

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8. Update on the IASE Website

Chris Wild, IASE Website Editor & Past-President

In terms of importance for the statistical education community, the most significant addition to the IASE webpage in 2006 was the Proceedings of ICOTS 7 held in July in Brazil. These, like all conference proceedings, are delivered from the IASE Publications page
http://www.stat.auckland.ac.nz/~iase/publications.php

There was also some significant archival content added in 2006 including the Proceedings of ICOTS 3 (1990) and the Proceedings of the First Scientific Meeting of the IASE held at Perugia in 1993. The scanning for all of the above was done by the Department of Statistics at the University of Auckland and Carol Joyce Blumberg's assistants at Winona State. We are still on the lookout for volunteers to scan other important Proceedings or even just send the books to Chris Wild. For example, we are still missing ICOTS 1,2 and 4.

In terms of effort for webmaster Stephen Cope, the biggest job has been porting Carol Joyce Blumberg's ISLP pages from Winona State University and recreating them as a wiki so that it is easy for many people around the world to work on the content remotely. There is a full story of what is going on in the International Statistical Literacy Project elsewhere in this issue of *IASE Review*.

Many regular features have been updated. For example, we now have 4 statistics education doctoral dissertations from 2006 at http://www.stat.auckland.ac.nz/iasedissert (from Andy Zieffler, David Sears, Jennifer Julia Kaplan and Sibel Kazak) and further additions to earlier years. Then, of course, there have been the regular additions to the archives of IASE Matters, ISI Newsletters, SERJ and so on.

IASE webpage: http://www.stat.auckland.ac.nz/~iase/

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9. Guy Lecturer for 2006 by the Royal Statistical Society: Dr Susan Starkings

IASE vice-president Susan Starkings (period 2001-2005) has been honored by the Higher Education Academy and the Royal Statistical Society. Susan has been awarded a National Teaching Fellowship for her excellence in teaching Mathematics and Statistics. This is a national life time award. Here follows the Press release from London South Bank University.

Dr Sue Starkings, is Head of the Skills for Learning within the Centre for Learning Support and Development at London South Bank University (LSBU).
She has taught for the past 24 years in schools, further and higher education. Her expertise lies both in her academic field of Mathematics and Statistics and in developing cross-disciplinary support for basic skills for students from non-traditional backgrounds. She has also taught for the Open University and was a visiting lecturer in Finland, Pakistan and the United Arab Emirates.
In the Skills for Learning team, a comprehensive support service accessed by approximately 2,000 students annually, she manages a team of academic staff to provide extra-curricular support in Mathematics, Statistics, English Language, Study Skills and Communications. LSBU has a diverse student population, most of whom do not enter university via a traditional route; in 1997 Sue set up the
Fast Track programme to enrol and support students from non-traditional backgrounds and to ensure their success. Her outstanding success is demonstrated by dramatically improved progression rates, particularly in Mathematics and Statistics.
Her expertise in teaching Mathematics and Statistics to mature and non-traditional students has led to a number of invitations to advise other institutions on teaching these groups. For example, she produced a

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series of 'self-help' worksheets in mathematics to enable student nurses to understand the mathematics required for their studies. Collaboration with organizations as the MSOR (the Higher Education Academy Subject Centre for Mathematics, Statistics and Operational Research) and the Centres for Excellence in Teaching and Learning has enabled her experiences, expertise and inspiration to be shared so that teaching and learning for both staff and students can be enhanced.

Her excellence in teaching has been recognised with her appointment as the prestigious Guy Lecturer for 2006 by the Royal Statistical Society.

Congratulations for Susan!

10. IASE Satellite Conference on Assessing Student Learning in Statistics, Guimarães, Portugal, August 19-21, 2007

Brian Phillips, Chair Programme Committee

The closing date for abstracts has now passed and many interesting papers are being selected for presentation at the meeting. They will include papers on writing effective exam questions, on exam implementation strategies, and on alternative assessment methods such as projects, lab assignments, and writing assignments. Those not presenting a paper can attend as a participant.
Proceedings will be available free at the publication page of IASE.

Conference Committee

Brian Phillips (Australia) (Joint Chair and Joint Chief Editor) bphillips@swin.edu.au

Beth Chance (USA) (Joint Chair) bchance@calpoly.edu

Allan Rossman (USA) arossman@calpoly.edu

Ginger Rowell (USA) rowell@mtsu.edu

Gilberte Schuyten (Belgium) gilberte.schuyten@UGent.be

Larry Weldon (Canada) (Joint Chief Editor) weldon@sfu.ca

Local Organizer: Bruno C. de Sousa (Portugal) bruno@mct.uminho.pt

Registration deadlines

- Authors must register by March 31, 2007
- Other participants must register by May 31, 2007

For more information visit the website at
http://www.stat.auckland.ac.nz/~iase/conferences.php?show=iasesat07

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11. IASE Activities at the 56th Session of the ISI, Lisboa, Portugal, August 22-29, 2007

Allan J. Rossman, Chair IASE Programme Committee

The 56th Session of the International Statistical Institute (ISI) will be held in Lisboa, Portugal. As it does at each major ISI conference, IASE will be organizing about 10 statistics education sessions for ISI 56. Please check the website at http://www.isi2007.com.pt/ for more information, and contact the session organizers below if you would like to offer to speak in one of the sessions.

IASE Sponsored IPMs

IPM37   *Research on Reasoning about Distribution,*
Joan Garfield (jbg@umn.edu)

IPM38   *How modern technologies have changed the curriculum in introductory courses,*
Lucette Carter (lucette.carter@gmail.com)

IPM39   *Preparing Teachers of Statistics,*
Allan Rossman (arossman@calpoly.edu)

IPM40   *Research on the use of simulation in teaching statistics and probability,*
Rolf Biehler (biehler@mathematik.uni-kassel.de)

IPM41   *Optimizing Internet-based Resources for Teaching Statistics* (cosponsored by IASC),
Ginger Holmes Rowell (rowell@mtsu.edu)

IPM42   *Observational Studies, Confounding and Multivariate Thinking,*
Milo Schield (milo@pro-ns.net)

IPM43   *Teaching of Official Statistics* (cosponsored by IAOS) ,
Sharleen Forbes (Sharleen.Forbes@stats.govt.nz)

IPM44   *Teaching of Survey Statistics* (cosponsored by IASS),
Steve Heeringa (sheering@isr.umich.edu)

IPM45   *Studying variability through sports phenomena* (cosponsored by Sports Statistics),
TBD

IPM46   *Use of Symbolic Computing Systems in Teaching Statistics* (cosponsored by IASC),
Zaven Karian (Karian@Denison.edu)

IASE Organizing Committee

Allan J. Rossman (USA) arossman@calpoly.edu

Gilberte Schuyten (Belgium) gilberte.schuyten@UGent.be

Chris Wild (New Zealand) c.wild@auckland.ac.nz

For more information visit the ISI 56 website at http://www.isi2007.com.pt/ or contact members of IASE OC.

12. SRTL-5 The Fifth International Research Forum on Statistical Reasoning, Thinking, and Literacy 'Reasoning about Statistical Inference: Innovative Ways of Connecting Chance and Data', Coventry, UK, August 11-17, 2007
Dani Ben-Zvi

The Forum's focus will be on informal ideas of inference rather than on formal methods of estimation and tests of significance. This topic is emerging from the presentations and discussions at SRTL-3 and 4 and is a topic of current interest to many researchers as well as teachers of statistics. As new courses and curricula are developed, a greater role for informal types of statistical inference is anticipated, introduced early, revisited often, and developed through use of simulation and technological tools. We encourage research papers that address reasoning about statistical inference at all levels of education including the professional development of elementary and secondary teachers.

Topics

We encourage submission of research papers that address questions such as the following:

1. What are the simplest forms of statistical inference that students can understand?
2. How does reasoning about statistical inference develop from the simplest forms (informal) to the more complex ones (formal)?
3. How can instructional tasks and technological tools be used to promote the understanding of statistical inference?
4. What are sequences of activities that can help student develop a conceptual understanding of statistical inference?
5. What types of misconceptions are found in students' reasoning about statistical inference?
6. What types of foundational knowledge and reasoning are needed for students to understand and reason about statistical inference?
7. How do students develop an understanding of the language used in describing statistical inference (e.g., significance, confidence)?
8. How does an understanding of statistical inference connect and effect understanding of other statistical concepts?
9. What are useful items and questions to use to assess understanding of statistical inference?

The local SRTL-5 organizers

Janet Ainley, janet.ainley@warwick.ac.uk
Dave Pratt, dave.pratt@warwick.ac.uk
For more information visit the SRTL-5 website: http://srtl.stat.auckland.ac.nz/

13. IASE Round Table Conference, Monterrey, Mexico, June 30–July 4, 2008

The Joint Study Conference (ICMI Study and IASE Round Table Conference) will take place at the Instituto Tecnológico y de Estudios Superiores. Monterrey, Mexico (http://www.mty.itesm.mx/). Participation in the Conference is only by invitation, based on a submitted contribution and a refereeing process. Accepted papers will be presented in the Conference and will appear in the Proceedings that will be published by ICMI and IASE as a CD-ROM and on the Internet. For more information see section 7. The Joint ICMI/IASE Study (pp. 22-26).

14. IASE Activities at the 57th Session of the ISI, Durban, South Africa, August 16–22, 2009

Helen MacGillivray, Chair IASE Programme Committee

The general theme of the IASE strand for ISI 2009 is "**Statistics Education for the Future**" but all ideas and proposals are welcome. We would particularly like to encourage statistics education proposals of interest to the statistical community of ISI. IASE members who are also members of another ISI Section may have great ideas for joint sessions.

Please share your ideas and proposals with the IASE Program Committee by 28th January, 2007.

For your interest, a summary of the IASE sessions and joint sessions in the 55th and 56th Sessions of the ISI is on the IASE website, together with an information sheet on the call for sessions.

IASE Program Committee

Helen MacGillivray (chair): h.macgillivray@qut.edu.au

Allan Rossman: arossman@calpoly.edu

Gilberte Schuyten: gilberte.schuyten@UGent.be

Chris Wild: c.wild@auckland.ac.nz

Pilar Guzman: pilar.guzman@uam.es

Delia North: northd@ukzn.ac.za

Share your ideas and suggestions with us! Contact: Helen MacGillivray (chair) h.macgillivray@qut.edu.au

15. The 8th International Conference on Teaching Statistics 'Data and Context in Statistics Education: Towards an Evidence-Based Society', Ljubljana, Slovenia, July 11-16, 2010
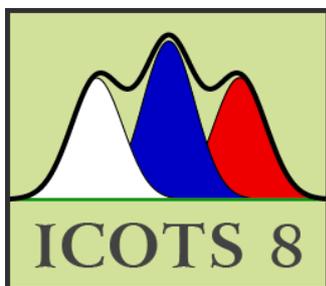
We are pleased to announce that the IASE Executive accepted the proposal made by the Statistical Society of Slovenia to hold ICOTS-8 in 2010 in Slovenia.

The decision was announced at the ICOTS-7 farewell dinner. The first steps towards organizing have already been taken by the IASE Executive: the conference theme has been chosen and the Scientific and Local Committees have been appointed.

The conference theme '**Data and Context in Statistics Education**' emphasizes two concepts that are key concepts at nearly all levels of statistics education. The subtitle '**Towards an Evidence-Based Society**' offers a gateway to reflections about the past, present and future status of statistics in society and about the impact of statistics education on learning objectives. We shall learn about statistics and see how we learn through the use of statistics.

The International Programme Committee Executive:

IPC Chair: John Harraway
Programme Chair: Roxy Peck
Information Manager: John Shanks

_____

        Scientific Secretary: Helen MacGillivray
        Editor Proceedings: Alan McLean

The Local Organizing Committee

        LOC Chair: Andrej Blejec.

You can access the ICOTS-8 website and read about the logo at: http://icots8.org/

Note now in your diary for 2010 the Conference venue and dates:

<div align="center">

Cankarjev Dom Cultural & Congress Centre
http://www.cd-cc.si/english
Ljubljana, Slovenia, Sunday Jul 11 - Friday Jul 16, 2010

DON'T MISS NEXT ICOTS!!!!!

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16. Meetings related to Statistics Education in 2006
Andrej Blejec (Slovenia), IASE Conferences Officer

February 24-26, 2006, T³ International Conference, Denver, CO, USA
 http://education.ti.com/educationportal/sites/US/nonProductMulti/pd_conferences_denver.html

June 30 – July 5, 2006, 3rd International Conference on the Teaching of Mathematics
 http://www.tmd.org.tr/ictm3/about_ictm3.html

July 2-7, 2006, ICOTS-7: Working Cooperatively in Statistics Education, Salvador (Bahia), Brazil
 http://www.maths.otago.ac.nz/icots7/icots7.php

July, 16 – 21, 2006, PME-30 Psychology Of Mathematics Education
 http://class.pedf.cuni.cz/PME30

August 6 – 10, 2006, Joint Statistical Meetings 2006, Seattle WA, USA
 http://www.amstat.org/meetings/jsm/2006/

December 12-16, 2006, The 11th Asian Conference in Mathematics, ATCM 2006, Hong Kong SAR, China
 http://www.atcminc.com/mConferences/ATCM06/index.shtml

See the Conferences page of the IASE website http://www.stat.auckland.ac.nz/~iase/ for upcoming conferences.

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17. National Correspondents

The IASE national correspondents help provide communication between local membership in their countries and the IASE. This includes passing on information about the IASE activities to those concerned with teaching and learning statistics as well as letting the IASE know about activities in their countries. Below is a list of the present national correspondents. We encourage all national correspondents to add news items at the IASE News Webpage http://www.stat.auckland.ac.nz/~iase/news.php. If there is no National Correspondent for your country and you feel that you can help us, please contact Brian Phillips at <bphillips@swin.edu.au.>

Argentina: Ana Silvia Haedo   <icazorla@uol.com.br >
Australia: Brian R. Phillips   <bphillips@swin.edu.au>
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18. Becoming a Member of IASE

The most rewarding aspect of IASE membership is participating in an international community of people who believe in the value of statistics education and wish to advance it. Members also benefit from reduced registration fees at IASE conferences and the main ISI conferences. They receive the *ISI Newsletter* and the *IASE Review*. They may subscribe at a reduced rate to statistical journals, for example the ISI flagship journal, the *International Statistical Review*, *Short Book Reviews*, *Teaching Statistics* (with includes the regular insert *IASE Matters*) and may purchase other IASE and ISI publications at a discounted price. An IASE membership application form is available from the IASE Members page at http://www.stat.auckland.ac.nz/~iase/members.php .